| Topic | Knowledge |
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| **Students should know all the work covered in Key Stage 3, as well as the new content covered in Years 10 and 11** | |
| **Dimensions** | I can find the areas of rectangles and triangles |
| | I can find the areas of kites, parallelograms & trapezia |
| | I can find the area of circles and sectors |
| | I can solve problems with area and perimeter |
| | I know the properties and names of 3 dimensional solids |
| | I can find the volume of a cuboid |
| | I can find the surface area of a cuboid |
| | I can find the volume of prisms and pyramids |
| | I can find the volume of cylinders and cones |
| | I can find the volume of a sphere |
| | I can solve problems with surface area and volume |
| **Units** | I can convert Imperial Units |
| | I can convert between metric and imperial units |
| | I can convert units of weight and capacity |
| | I can convert between different units of area/volume |
| | I can convert between Speed Distance Time |
| | I can convert Force Pressure and Area. |
| | I can convert Mass Density and Volume. |
| | I can find lower and upper bound. |
| **Congruence & Similarity** | I can identify congruence (SSS, SAS, RHS, ASA). |
| | I can label angles and sides in a triangle appropriately and prove congruence. |
| | I can calculate lengths in similar triangles. |
| | I can calculate lengths in similar shapes |
| | I can use scale factors to calculate areas and volumes |
| | I can express scale factors in ratio notation |
| | I can problem solve with similarity and unknowns |
| **Pythagoras Theorem and Trigonometry** | I can calculate the area of a square |
| | I can find the length of the sides of a square given the area |
| | I understand the relationship between squaring a number and finding a square root |
| | I can identify the hypotenuse in a right-angled triangle |
| | I can use Pythagoras' theorem to describe the relationship between the sides in a right-angled triangle |
| | I can recall the formula for Pythagoras theorem |
| | I can find the hypotenuse of a right-angled triangle given the length of the other two sides |
| | I can apply Pythagoras theorem to a range of non-routine problems, including finding the distance between two points on a set of axes |
| | I can apply Pythagoras theorem to problems in 3 dimensional objects, such as cuboids and pyramids |
| | I can identify the opposite and adjacent sides in a right-angled triangle where a second angle has been labelled |
| | I can relate pairs of sides to the trigonometric ratios' sine, cosine and tangent |
| | I can calculate an angle in a right-angled triangle given two sides |

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| | I can calculate a side described in the numerator of a ratio given an angle and another side |
| | I can use trigonometry to calculate missing sides and angles in some more non-routine problems |
| | I can use trigonometry to calculate missing sides and angles in 3 dimensional objects, such as cuboids and pyramids |
| | I can derive exact values for sine, cosine and tangent of 0°, 30°, 45°, 60°, 90° |
| | I can use exact values for sine, cosine and tangent of 0°, 30°, 45°, 60°, 90° |
| **Representing and Analysing Data** | I can calculate the mean, median, mode and range of various sets of data |
| | I can construct a bar chart |
| | I can construct and interpret a pie chart |
| | I can calculate mean from a frequency table |
| | I can calculate mean from a grouped frequency table |
| | I can construct a frequency polygon |
| | I can construct a histogram |
| | I can Interpret a histogram |
| | I can draw a cumulative frequency diagram |
| | I can interpret a cumulative frequency diagram |
| | I can label a box plot |
| | I can interpret a box plot |
| | I can use appropriate methods to analyse data |
| **Quadratics** | I understand the difference between an equation, expression, identity and Formulae |
| | I can expand two brackets (two binomials) |
| | I can expand three brackets |
| | I can factorise a quadratic expression where the coefficient of x is 1 |
| | I can factorise a quadratic expression where the coefficient of $x \neq 1$ |
| | I can solve quadratics by factorisation |
| | I can solve a quadratic equation using a formula. |
| | I can find solutions of quadratic equations using a graph |
| | I can complete the square |
| | I can solve quadratic equations by completing the square |
| | I can find the turning point of a quadratic function by completing the square |
| | I can sketch a quadratic curve, showing where it crosses the axes and its turning point |
| **Real Life Graphs** | I can draw a linear graph from its equation |
| | I can find the equation of a line from its graph and write it on the form $y = mx + c$ |
| | I can draw a quadratic graph from its equation |
| | I can identify roots and turning points of a quadratic graph |
| | I can draw a graph of a cubic function |
| | I can draw an exponential graph |
| | I can represent a journey on a distance-time graph |
| | I can calculate the gradient of a distance time graph and interpret this as the speed of a moving object |
| | I can use a conversion graph to convert one unit to another |
| | I can calculate the gradient of a conversion graph and interpret this as a rate |

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| | I can calculate the gradient of a velocity-time graph and interpret this as acceleration |
| **Inequalities** | I can use and understand inequality symbols |
| | I can list the integer values that satisfy an inequality |
| | I can represent an inequality on a number line |
| | I can solve inequalities |
| | I can solve inequalities with brackets |
| | I can solve inequalities with negatives |
| | I can show inequalities on a graph |
| | I can find the region that satisfies given inequalities |
| **Circle Theorems** | I can identify and use angles at the center are twice the angle at the circumference |
| | I can identify and use angles in a cyclic quadrilateral |
| | I can identify and use angles in a semi-circle |
| | I can identify and use angles in the same segment |
| | I can identify and use perpendicular bisectors of chords |
| | I can identify and use radius is perpendicular to a tangent |
| | I can identify and use tangents from a given point |
| **Iterations** | I can substitute a value into a formula |
| | I can rearrange a formula to make x the subject |
| | I can create my own iterative formula |
| | I can use $x_{n+1}$ to calculate the next solution |
| | I can use $x_{n+1}$ to calculate the solution to up to 5 decimal places |
| **Vectors** | I can write a vector as a column vector |
| | I can translate a shape using a column vector |
| | I can sum vectors |
| | I can use vectors to write a new vector |
| | I can show when two vectors are parallel |
| | I can describe perpendicular vectors |